

Use of a cellulosic staple fibre of the Lyocell type

The present invention relates to the use of a cellulosic staple fibre of the Lyocell type as well as of textile mixtures containing said fibre.

As an alternative to the viscose process, in recent years there have been described a number of processes wherein cellulose, without forming a derivative, is dissolved in an organic solvent, a combination of an organic solvent and an inorganic salt, or in an aqueous saline solution.

So far, however, only a single process for the production of such moulded bodies has achieved industrial-scale realization. In this process a tertiary amine-oxide, in particular N-methylmorpholine-N-oxide (NMMO), is used as a solvent. The process for the production of moulded bodies from a solution of cellulose in an aqueous tertiary amine oxide is referred to as the "amine-oxide process" or "Lyocell process".

In said process, the solution of cellulose is usually extruded by means of a forming tool, whereby it is moulded. Via an air gap, the moulded solution gets into a precipitation bath, where the moulded body is obtained by precipitating the solution. The moulded body is washed and dried, optionally after further treatment steps.

Cellulose fibres produced from such solutions are called "solvent-spun" fibres and have received by BISFA (The International Bureau for the Standardisation of man made Fibres) the generic name Lyocell. A process for the production of Lyocell fibres is described, for instance, in US-A 4,246,221. The amine-oxide process yields fibres which are distinguished by a high tensile strength, a high wet-modulus and a high loop strength.

Lyocell fibres are mainly used in the form of cut fibres of a discrete length, i.e. as so-called „staple fibres“. If in the following „Lyocell fibres“ are mentioned, Lyocell fibres in the form of staple fibres are meant by that.

It is known to use Lyocell fibres as filling fibres, for instance, in the form of fleeces in quilts and as pellets in cushions. In this application, the advantage of Lyocell fibres over other fibre types such as, f.i., polyester fibres lies in their excellent physiological features. The lower bulk resilience and washing resistance, as compared to polyester fibres, must be noted as a disadvantage. In order to obtain the best possible physiology and serviceability, textile

mixtures of Lyocell and polyester fibres are recommended. Such mixtures are described, for instance, in EP-A 0 941 209.

But also downs and feathers are used as further mixing partners for Lyocell fibres, for example for coffered blankets. Those mixtures can be produced both in the dry state and in the wet state.

It has thereby turned out that fibres with lower titres and greater cutting lengths are prone to inhomogeneous mixtures and display a tendency toward entanglements, which is why they are ill-suitable for this application.

It is the object of the present invention to provide a staple fibre of the Lyocell type which is better suited as a filling fibre and as a mixing partner for textile mixtures with other fibre types or downs and feathers, respectively, than previously known types of Lyocell fibres.

Said object is achieved in that a cellulosic staple fibre of the Lyocell type with a value of the ratio between titre (in dtex) and cutting length (in mm) of 0.10 or more is used as a filling fibre for blankets, cushions, pillows, mattresses or fleeces for upholstered furniture.

Surprisingly, it has turned out that Lyocell fibres with a higher value of the ratio between titre and cutting length, as compared to known fibre types, display a lower tendency toward entanglements and produce, for instance, very homogeneous mixtures with downs.

On the other hand, however, the entanglement and homogeneity problems will grow with a decreasing titre and an increasing cutting length. Lyocell fibres whose value of the ratio between titre and cutting length is 0.5 to 5 have turned out to be an excellent type of fibre, in particular for mixtures with downs.

The titre of the fibre used according to the invention preferably is 1.3 to 3.3 dtex, particularly preferably to 1.3 to 1.7 dtex.

In a particularly preferred embodiment, the fibre used according to the invention has a titre of 6.7 dtex and a cutting length of 6 mm.

For reasons of processing, the cutting length should not fall short of 3 mm. Cutting lengths of 22-30 mm have proven to be suitable if the fibre is used in fibre pellets, for use in fleeces, cutting lengths of up to 60 mm are suitable.

The fibre used according to the invention is preferably provided in a siliconized form.

In a preferred embodiment, the above-defined fibre of the Lyocell type is used in a mixture with at least one fibre of a different fibre type and/or with downs and feathers.

The textile mixture can be provided, for instance, in the form of a fleece or pellet.

If a different fibre is used as a mixing partner, this fibre is preferably selected from the group of synthetic fibres, particularly preferably from the group consisting of polyester fibres, polyamide fibres, polypropylene fibres and polylactate fibres.

The content of the above-defined Lyocell fibre in the mixture preferably is 30 to 50% by weight.

A further aspect of the present invention consists in a blanket, a cushion, a pillow, a mattress or a fleece for upholstered furniture, containing a staple fibre of the Lyocell type as defined above and/or a mixture as defined above as a filling fibre.

It has been shown that Lyocell fibres with a particular ratio between titre and cutting length and textile mixtures, respectively, containing said fibre are perfectly suitable for use as a filling fibre.